adjusted risk of low work unit social capital increased by OR=1.72, CI 95% 1.65–1.79.

Conclusion Managers' perception of job strain was strongly associated with independently measured workplace social capital. The direction of the causal pathway, if any, may be either way which points to a need for prospective studies and analyses of mediating and/or moderating factors.

Poster Presentation

Musculoskeletal

0357

MULTI-SITE MUSCULOSKELETAL PAIN IN SWEDISH POLICE AND ITS ASSOCIATION WITH USE OF MANDATORY EQUIPMENT

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Background Musculoskeletal disorders are a common problem among uniformed police with lower back pain being most frequently reported (Gyi and Porter, 1998). Wearing mandatory equipment (duty belt and body armour) and sitting for long periods of time in fleet vehicles are characteristic workload factors linked to musculoskeletal disorders in police (Filtner et al., 2014, Holmes et al., 2013).

Aim The aim of this study was to determine the prevalence of multi-site musculoskeletal pain among Swedish police and to explore the possible association to physical workload factors with a special focus on mandatory equipment.

Method A cross-sectional study was carried out with responses from 4185 uniformed police. Data was collected through a self-administered online survey including questions about work environment, physical workload factors, mandatory equipment and musculoskeletal pain. Multi-site musculoskeletal pain was determined by summing pain sites from four body regions. Binomial logistic regression was performed to explore the association between multi-site musculoskeletal pain and 1) use of mandatory equipment and 2) sitting for long periods in fleet vehicles.

Result The prevalence of multi-site musculoskeletal pain at least one day per week within the previous three months was 41.3%. A statistically significant association was found between multi-site musculoskeletal pain and mandatory equipment whereas sitting for long periods of time in fleet vehicles was not found to be significantly associated to multi-site musculoskeletal pain.

Conclusion Multi-site musculoskeletal pain is a considerable problem among Swedish police and the association to mandatory equipment should therefore be further investigated including psychosocial factors.

Poster Presentation

Exposure Assessment

0358

RHINITIS SYMPTOMS AND IMMUNOLOGICAL RESPONSE AFTER OCCUPATIONAL EXPOSURE TO SHRIMP SHELL POWDER

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Occupational bioaerosol exposure may cause a range of temporary or permanent health effects, depending on host factors and the type and duration of exposure.

In the present study, we investigated rhinitis and immunological markers in all employees in a shrimp shell powder production factory, before and after exposure to shrimp shell powder.

Material and methods The study population comprised 11 employees. Personal exposure to inhalable dust (fullshift) was measured in the breathing zone of the employees during production of shrimp shell powder. All employees answered a self-administered questionnaire before and after exposure, about working tasks, airways symptoms, and smoking habits. Blood samples were collected before and after the work shift, and analysed for leukocyte counts, tryptase, total IgE, IgA, IgM, IgG.

Results Shrimp shell powder workers were exposed to 12 mg/m³ inhalable dust (mean 11.8 mg/m³, median 8.2 mg/m³, n=16), the exposure level for unexposed group was less than 1 mg/m³ inhalable dust (mean 0.4 mg/m³, median 0.4 mg/m³, n=10).

Employees working with shrimp shell powder had more rhinitis symptoms (stuffy nose and runny nose) than employees working with fish.

Although not statistically significant, the peripheral levels of tryptase, leucocytes and neutrophils in peripheral blood appeared to be highest among exposed workers, increasing after exposure.

Conclusions Shrimp shell powder workers are exposed to high level of inhalable dust compared to the occupational exposure limit of organic dust (5 mg/m³).

Exposure was related to more rhinitis symptoms and indicated (non-significantly) higher immunological parameters

Follow-up of this industry and more study is needed.

Oral Presentation

Other

0359

SYSTEMATIC REVIEW OF OCCUPATIONAL CHEMICAL EXPOSURES AND CARDIOVASCULAR DISEASES

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Background A systematic review of the associations between occupational chemical exposures and cardiovascular diseases has been performed under management of Swedish Agency for Health Technology Assessment and Assessment of Social Services (SBU).

Methods Inclusion criteria: (i) epidemiology publication in English in peer-reviewed journal between 1970 and 2016, (ii) cohort studies with at least 50 exposed participants or case-control studies with at least 50+50 participants. Relevance and quality were assessed using predefined criteria. Level of evidence was assessed using the GRADE system. Consistency of findings was examined for a number of confounders and regarding the healthy worker effect when possible.

Results More than 8000 abstracts were screened. 162 articles of high or medium high scientific quality were finally included. There was moderately strong evidence (grade 3 out of 4) for a relationship between silica dust, engine exhaust and welding and IHD incidence. Limited evidence (grade 2) was found for arsenic, benz(a)pyrene, lead, dynamite, carbon disulphide, carbon monoxide, cutting fluids, TCDD, asbestos and tobacco smoke in the work environment. Results for stroke, cor pulmonale and high blood pressure will also be reported.

Conclusions This review identified several established associations, some less established and many knowledge gaps including lack of studies on women. Many chemical exposures have not been studied epidemiologically and there is often a shortage of exposure estimates, particularly concerning intensity and long-term exposure. A comprehensive risk analysis of chemical exposures must use social, environmental and experimental results as well.

Oral Presentation

Cardiovascular Disease

0360 OCCUPATIONAL EXPOSURE TO RESPIRABLE SILICA DUST IN MEN AND WOMEN AND RISK FOR ACUTE MYOCARDIAL INFARCTION

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Respirable silica dust is a common and serious occupational hazard to workers' health. Inhalation causes inflammation which is a risk factor for cardiovascular disease, but few studies have confirmed a relationship. In the present study, we have investigated the risk of myocardial infarction in workers exposed to respirable silica dust, as well as differences in sensitivity based on gender.

The cohort consists of manual workers in the Swedish National Census in 1980 with information on demography and occupation (1960–1990). Information on hospital admissions for acute myocardial infarction and cause of death were obtained from nation-wide registers. A job-exposure matrix

was used to assess lifetime occupational exposure. No smoking data was available.

Among manual workers ever exposed to respirable silica dust, the hazard ratio (HR) for acute myocardial infarction was 1.29 (95% Confidence Interval (CI) 1.15–1.46) for women, and 1.02 (95% CI 1.00–1.04) for men, respectively. In the highest quartile of cumulative exposure the HR was 1.66 (95% CI 1.27–2.18) for women, and 1.06 (95% CI 1.03–1.10) for men, respectively. We found a dose-response relationship between exposure and disease. The population etiologic fraction of disease for women was 11%. In absolute numbers this corresponds to 7 extra cases/10000 person years among exposed women in the highest exposed group.

In conclusion, occupational exposure to respirable silica dust was in this study related to an increased risk for acute myocardial infarction in women, indicating a slightly increased sensitivity of the exposed women.

Oral Presentation

Cancer

0361 A 49 YEAR FOLLOW-UP OF MORTALITY IN THE BRITISH RUBBER INDUSTRY

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Rubber workers in Great Britain were historically exposed to various carcinogenic substances, including β -naphthylamine, which was removed from industrial processes in 1949. The Health and Safety Executive (HSE) initiated in 1967 a prospective occupational cohort study of British rubber industry workers, including men 35 years of age and older, to examine cancer mortality (n=40 867, representing 381 factories). Findings from a 10 year follow-up of that cohort suggested excess mortality from cancers of the bladder, lung, and stomach, which differed by exposure to naphthylamines, as well as by industry sector and job code.

The purpose of this analysis is to extend mortality follow-up through to 2015, allowing an assessment of cancers in older ages and with longer latency periods. As well as headline Standardised Mortality Ratios (SMRs) for the cancer subtypes previously investigated, we will present mortality risks for a range of causes including leukaemia, multiple myeloma, circulatory and respiratory diseases. We will use England and Wales reference rates to compare mortality by employment duration and sector in the rubber industry. Preliminary analysis of a majority subset of the cohort (n=34,595) to 2015 identified an elevated all cause SMR of 1.11 (95%CI 1.10–1.12). More detailed results from this multi-decade follow-up of workers from rubber manufacturing will provide valuable insights into cancer mortality risks for exposed occupational populations, both in the UK and elsewhere.